

Invited Review

Preferred Reporting Items for study Designs in Endodontology (PRIDE): Guiding authors to produce high-quality manuscripts

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Abstract

Implementing evidence-based dentistry involves a systematic process that includes collecting and analyzing evidence to address a clinical question. However, the inadequacy of many manuscripts and the incomplete and often misleading information they provide when published in healthcare journals are of major concern. The literature confirms that reporting guidelines improve the overall completeness and transparency of manuscripts in the field of oral health research. To improve the overall quality and clinical translation of studies in Endodontology, a new suite of guidelines under the umbrella of the Preferred Reporting Items for study Designs in Endodontology (PRIDE) project has been developed. Under the PRIDE project, five reporting guidelines focusing on specific study designs within the specialty either have or are in the process of being developed: (Case reports: Preferred Reporting Items for Case reports in Endodontics (PRICE); Randomized clinical trials: Preferred Reporting Items for RANdomized Trials in Endodontics (PRIRATE); Laboratory studies: Preferred Reporting Items for Laboratory studies in Endodontology (PRILE); Animal studies: Preferred Reporting Items for Animal Studies in Endodontology (PRIASE) and Observational studies: Preferred Reporting items for OBServational studies in Endodontics (PROBE). For each guideline, the project leaders (VN, PD) formed a steering committee made up of experts from across the globe. Each steering committee developed an initial draft checklist containing a list of proposed items related to the specific study design to fit the specialty of Endodontology. In addition, a flowchart to graphically illustrate the process involved in the development of a manuscript was created to accompany each individual guideline. Each steering committee then formed a Delphi panel that included approximately 30 experts from across the globe who commented individually and anonymously upon the items to be included in each checklist and flowchart until a consensus was achieved. The draft checklists and flowcharts were then discussed during face-to-face or online meetings of approximately 20 experts to further debate and refine each guideline, which were then piloted by several authors while writing a manuscript. Eventually, each guideline (checklist and flowchart) will be published along with supporting material as well as being freely accessible on the PRIDE website (www.pride-endodonticguidelines.org). The PRIDE guidelines will help authors produce high-quality manuscripts in the discipline of Endodontology.

Keywords: Endodontics; Preferred Reporting Items for study Designs in Endodontology; reporting guidelines; root canal

INTRODUCTION

Ultimately, research in Endodontology aims to relieve pain and preserve natural teeth to improve the oral health and

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quality of life of patients. One of the main responsibilities of basic and clinical scientists is to recognize and address poor study designs, flawed study implementation, imprecise reporting and unclear clinical translation, which are major flaws in many manuscripts submitted to journals as well as in many existing publications. The findings from well-designed, properly planned, and executed research can be used for clinical decision-making.^[1] Unfortunately,

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many manuscripts lack clarity, transparency, and completeness.^[2] For example, inadequate reporting can fail to provide sufficient information on the methodology of studies, which prevents the reader determining the reliability and accuracy of the results and conclusions, and is likely to have a negative impact on clinical decision-making.^[1,2]

The quality of manuscript submitted to one of the leading endodontic journals is variable and is often suboptimal; in fact, many are incomplete, lack transparency, and are inaccurate and as a consequence are rejected for publication. In fact, some journals reject over 85% of submissions (Dummer PMH, unpublished data). Endorsement, adherence, and robust implementation of reporting guidelines by authors, referees, and editors can improve the overall completeness, transparency, and clinical translation of manuscripts within oral health-related disciplines.^[3] A reporting guideline is simple and structured and supports authors when they draft manuscripts. In general, reporting guidelines consist of several domains and a detailed checklist of items to be included and considered in a manuscript and are often accompanied by a flowchart.

The specialty of Endodontology deals with a variety of study designs such as case reports, randomized clinical trials, observational studies, animal studies, and laboratory studies. Although generic reporting guidelines already exist for various study designs, they do not have a specific focus on Endodontology. For example:

- Case reports - CAse REport (CARE) guidelines^[4]
- Animal studies - Animals in Research: Reporting *In Vivo* Experiments (ARRIVE) guidelines^[5]
- Laboratory studies - Modified CONSORT checklist^[6]
- Observational studies - STrengthening the Reporting of Observational studies in Epidemiology (STROBE)^[7]
- Clinical trials - Consolidated Standards for Reporting Trials (CONSORT) statement.^[1]

In publications, images are considered an integral part of the evidence on which authors base the interpretation and conclusions of their research or clinical reports. Manuscripts within the specialty of Endodontology often contain images to add value to the text. However, various factors such as the method of image acquisition, the quality and standards for interpretation, and the training and experience of evaluators can influence the quality of images and their interpretation. As a direct consequence of the importance of images, the Clinical and Laboratory Images in Publications (CLIP) principles were developed to assist authors when including images in manuscripts.^[8]

It is important that authors in the field of Endodontology are supported to reduce the waste of time and resources that occur when manuscripts are rejected or have to be revised

and resubmitted. Guidelines are therefore essential to improve the overall quality of manuscripts and to facilitate the translation of studies to clinical endodontic practice. The aim of this manuscript is to describe new guidelines for improving the standards of reporting: Preferred Reporting Items for study Designs in Endodontology (PRIDE).

The need for Preferred Reporting Items for study Designs in Endodontology

Adhering to the new suite of PRIDE guidelines^[9,10] will help:

- Authors to write high-quality manuscripts
- Researchers to plan and execute studies of the highest quality to benefit clinicians and patients
- Clinicians to allow them to arrive at appropriate clinical decisions
- Editors/referees of journals to critically appraise manuscripts during their review prior to publication.

Preferred Reporting Items for study Designs in Endodontology projects

Under the umbrella of PRIDE, five reporting guidelines have been planned to address specific study designs:

- Case reports: Preferred Reporting Items for Case reports in Endodontics (PRICE)^[11]
- Randomized clinical trials: Preferred Reporting Items for RAnomized Trials in Endodontics (PRIRATE)^[12]
- Laboratory studies: Preferred Reporting Items for Laboratory studies in Endodontology (PRILE)^[13]
- Animal studies: Preferred Reporting Items for Animal Studies in Endodontology (PRIASE)^[14]
- Observational studies: Preferred Reporting items for OBServational studies in Endodontics (PROBE).^[10]

Methodology followed to develop the Preferred Reporting Items for study Designs in Endodontology guidelines

The PRIDE guidelines are being developed based on the Guidance for Developers of Health Research Reporting Guidelines.^[2] The PRIDE project leaders (PD, VN) identified the need to develop reporting guidelines for various study designs to assist authors when writing manuscripts specifically for endodontology and identify reporting deficiencies before submission. The PRIDE project leaders (VN, PD) formed a steering committee for each study design that included experts from around the world. The protocols for how the reporting guidelines were developed for case reports, clinical trials, animal studies, laboratory studies, and observational studies have been published in the *International Endodontic Journal*.^[10-14] For each study design, the steering committee developed an initial draft checklist and a flowchart by combining and modifying the existing generic guidelines (e.g., CARE, CONSORT) and the CLIP principles.^[8] In addition, as a result of discussion, several new items were added to each draft checklist. The steering committees formed

individual Delphi panels of approximately 30 members that included academics, endodontists, general dentists, and two public/patient representatives. The Delphi panel associated with each guideline was invited to participate in an online Delphi survey to provide feedback on the clarity and suitability on the items to be included in the checklist and flowchart. The revised checklists and flowcharts developed by the Delphi panels were then discussed at face-to-face or online meetings made up of a minimum of 20 members. Based on comments received during these meetings, the steering committees modified the checklists and flowcharts. The revised checklists and flowcharts were then piloted by several experts who used the guidelines to draft manuscripts. Finally, the steering groups along with several external experts approved and published two documents for each guideline:

- i. Consensus document: To explain the process involved in developing the guidelines with the final version of the checklist and flowchart included
- ii. Explanation and elaboration document: To provide a comprehensive explanation with examples from the published literature for each item within the checklist and flowchart.

CURRENT STATUS OF THE PRIDE PROJECT [FIGURE 1]

Preferred Reporting Items for Case reports in Endodontics

The initial draft checklist was developed by combining and modifying the items from the CARE guidelines^[4] and CLIP principles.^[8] The steering committee formed a PRICE Delphi group of 30 individuals to take part in the

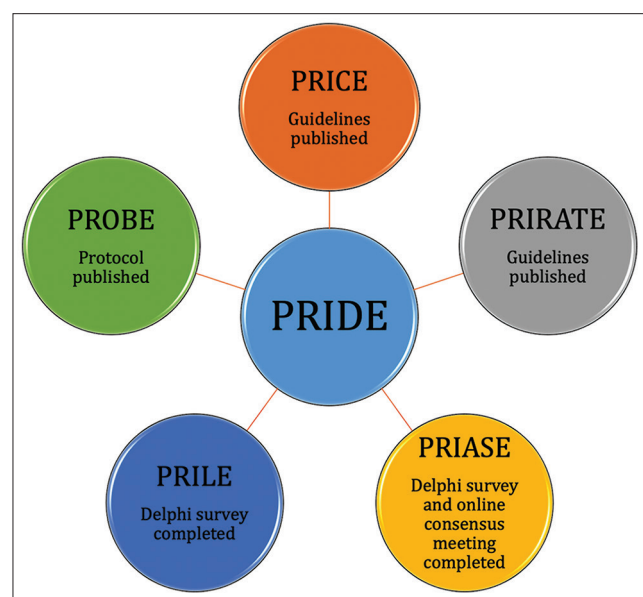


Figure 1: Current status of the Preferred Reporting Items for study Designs in Endodontology project

online Delphi survey. A 100% response rate was achieved in both rounds 1 and 2. The PRICE face-to-face consensus meeting was conducted at the 19th European Society of Endodontology (ESE) Biennial Congress held in Vienna, Austria, on September 13, 2019. The meeting was chaired by project leaders and was attended by 23 experts from around the world. Subsequent to the meeting, the steering committee developed a final version of the checklist and flowchart, which were piloted by several authors. Finally, the PRICE 2020 guidelines were published in the *International Endodontic Journal* and included a checklist of 47 items and a flowchart.^[15]

Preferred Reporting Items for RANdomized Trials in Endodontics

The initial draft checklist was developed by combining and modifying the items from the CONSORT guidelines^[1] and CLIP principles.^[8] The steering committee formed a PRIRATE Delphi group of 30 individuals to participate in the online Delphi survey. A 100% response rate was achieved in both rounds 1 and 2. The PRIRATE face-to-face consensus meeting was conducted at the 19th ESE Biennial Congress held in Vienna, Austria, on September 13, 2019. The meeting was chaired by two steering committee members and was attended by 21 experts from around the world. Following the meeting, the steering committee developed a final version of the checklist and flowchart, which were piloted by several authors. Finally, the PRIRATE 2020 guidelines were published in the *International Endodontic Journal* and included a checklist of 58 items and a flowchart.^[16]

Preferred Reporting Items for Animal Studies in Endodontology

The initial draft checklist was developed by combining and modifying the items from the ARRIVE statements^[5,17] and CLIP principles.^[8] The steering committee formed a PRIASE Delphi group of 31 individuals to participate in the online Delphi survey. Rounds 1 and 2 received a response rate of 100% and 94%, respectively. Due to the COVID-19 pandemic, the PRIASE steering committee decided to replace the planned face-to-face meeting with an online virtual meeting using Zoom. The online meeting via Zoom was chaired by the project leaders and was attended by 28 experts. The steering committee is in the process of finalizing the checklist and flowchart.

Preferred Reporting Items for Laboratory studies in Endodontology

The initial draft checklist was developed by combining and modifying the items from the modified CONSORT checklist of items for reporting *in vitro* studies of dental materials^[6] and the CLIP principles.^[8] The steering committee formed a PRILE Delphi group of 30 individuals to participate in the online Delphi survey. Rounds 1 and 2 both received a response rate of 100%. Due to the COVID-19 pandemic, the

PRILE steering committee decided to replace the planned face-to-face meeting with an online virtual meeting using Zoom. The steering committee is finalizing the date and time of the online meeting.

Preferred Reporting items for OBServational studies in Endodontics

The PROBE steering committee is in the process of developing an initial draft checklist by combining and modifying the items from the STROBE statement^[7] and the CLIP principles.^[8]

PREFERRED REPORTING ITEMS FOR STUDY DESIGNS IN ENDODONTOLOGY (PRIDE) WEBSITE

The PRIDE website (www.pride-endodonticguidelines.org) is a new online web-based resource that was developed by the PRIDE team. It provides a collection of reporting guidelines in the field of Endodontology.^[9] All the materials related to the PRIDE guidelines will be freely accessible on the PRIDE website. Academics, researchers, journal editors, peer reviewers, and clinicians are encouraged to feedback comments on the PRIDE website as well as each guideline via the PRIDE website (contact@pride-endodonticguidelines.org). The project leaders with the help of the steering committees will update the guidelines when needed.

PREFERRED REPORTING ITEMS FOR STUDY DESIGNS IN ENDODONTOLOGY (PRIDE) ENDORSEMENT

The project leaders (VN, PD) have contacted the editors of several journals dedicated to Endodontology and also various general dental journals to ask them to consider adopting the PRIDE guidelines within their “Instructions to authors.” Several journals have already agreed to adopt the PRIDE guidelines.

PREFERRED REPORTING ITEMS FOR STUDY DESIGNS IN ENDODONTOLOGY (PRIDE) FUTURE PLANS

1. Translation: For the benefit of authors, the PRIDE guidelines will be translated into various languages and will be made freely accessible on the PRIDE website
2. Additional guidelines: Additional guidelines will be developed for various other study designs (e.g., studies on diagnostic accuracy). The PRIRATE 2020 guidelines concentrated mainly on randomized trials with parallel study designs, and to address other study

design in clinical trials (e.g., cluster), an extension of the PRIRATE 2020 guidelines is under consideration

3. Workshop/webinar: The PRIDE guidelines will be promoted by conducting workshops/seminars at national and international congresses, as well as producing educational videos and webinars.

CONCLUSION

The quality, transparency, reproducibility, and completeness of manuscripts submitted to journals are expected to improve as a consequence of the adoption of the PRIDE guidelines. This can be accomplished when all journals reporting studies in Endodontology mandate that the preparation of manuscript should follow the relevant PRIDE guidelines and highlight their relevance in their author guidelines.

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Conflicts of interest

There are no conflicts of interest.

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